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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,894	12/08/2003	Herman Kwong	57983.000155	9607
21967 7590 03/30/2009 HUNTON & WILLIAMS LLP INTELLECTUAL PROPERTY DEPARTMENT 1900 K STREET, N.W. SUITE 1200 WASHINGTON, DC 20006-1109				
EXAMINER				
ROSSOSHEK, YELENA				
ART UNIT		PAPER NUMBER		
2825				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/728,894

Applicant(s)

KWONG ET AL.

Examiner

Helen Rossoshek

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the Application 10/728,894 filed 12/08/2003 and Appeal Brief filed 12/22/2008.

2. Claims 1-18 remain pending in the Application.

3. In view of the Appeal Brief filed on 12/22/2008, PROSECUTION IS HEREBY REOPENED. New ground of rejection is set forth below.

4. To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 1-14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

the claims must have either a) transform underlying subject matter (such as an article or materials) to a different state or thing; or b) to be tied to another statutory class (a particular machine or apparatus). In re Bilski, F.3d (Fed. Cir. 2008).

The claims fail to include transformation from one physical state to another and/or to be tied to another statutory class. Although, the claims appear useful and concrete, but the claims do not appear to meet the test of In re Bilski above. Merely assigning set of one or more contacts... would not appear to be sufficient to constitute a) the transformation or b) to be tied to another statutory class. As such, the subject matter of the claims 1-14 is not patent eligible.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hauser et al. (German Patent DE19922186) in view of Agrawal et al. (US Patent 6,184,713).

With respect to claim 1 Hauser et al. teaches a method for mapping contacts of a programmable logic device (PLD) to contacts of an electronic component in a signal routing device having one or more layers (within several IC chips realized on circuit boards/signal routing device and connected one to another or to other electronic components, wherein circuit board includes several layers (Page 1)), the method comprising:

assigning a set of one or more contacts of the PLD to one or more respective contacts of the electronic component based at least in part on a pattern of electrically conductive traces routed from respective contacts of the electronic component via one or more channels formed at one or more layers of the signal routing device, the one or more channels being formed by arranging vias for contacts of at least the electronic component in the signal routing device (within pin/set of contacts assignment/allocation of the IC chips for connecting one to another within conductor tracks/conductive traces, wherein connection is implemented through corresponding vias in the corresponding layers, and wherein vias form channels (Page 1)).

However Hauser et al. lacks the specifics regarding programmable logic devices (PLD) connected to electronic components. Agrawal et al. teaches CPLD coupled to other circuits/electronic components by PCB traces as shown on the Fig. 1 (col. 11, ll.12-17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used Agrawal et al. to teach the specifics subject matter Hauser et al. does not teach, because a robust CPLD architecture has been disclosed

for efficiently adapting to the control overhead needs, pinout needs and speed requirements of designs (col. 40, ll.13-18).

With respect to claim 10 Hauser et al. teaches a method for mapping contacts of a programmable logic device (PLD) to contacts of an electronic component in a signal routing device having one or more layers (within several IC chips realized on circuit boards/signal routing device and connected one to another or to other electronic components, wherein circuit board includes several layers (Page 1)), the method comprising:

determining a first pattern of electrically conductive traces routed from respective contacts of the electronic component via one or more channels formed at one or more layers of the signal routing device (within conductor tracks/conductive traces formed in the multilayered circuit board/signal routing device within channels formed on the board using vias (Page 1));

determining a first contact assignment pattern for one or more contacts for one or more contacts of the PLD based at least in part on the first pattern of electrically conductive traces (within pin allocation on the IC chip/PLD as a standard design of conductor tracks 100 as shown on the Figs. 4 (Page 5));

refining the first pattern of electrically conductive traces based at least in part on the first contact assignment pattern to generate a second pattern of electrically conductive traces routed from the respective contacts of the electronic component via one or more layers of the signal routing device (selecting associated conductor track/trace for each case /pin allocation (Page 1)); and

determining a second contact assignment pattern for one or more contacts of the PLD based at least in part on the second pattern of electrically conductive traces (within modified mirror image wiring conductor track 101 for pin allocation on the IC chip as shown on the Fig. 5, wherein several IC chips are assembled on the circuit board using their conductor tracks/conductive traces (Page 5)); and

wherein the one or more channels are formed by arranging vias for contacts of at least the electronic components in the signal routing device (within assembly technology using multi-layers of conductive tracks/traces connecting several IC chips or with other electronic components on the circuit board/signal routing device, wherein conductive tracks are realized within channels using vias (Page 1)).

However Hauser et al. lacks the specifics regarding programmable logic devices (PLD) connected to electronic components. Agrawal et al. teaches CPLD coupled to other circuits/electronic components by PCB traces as shown on the Fig. 1 (col. 11, ll.12-17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used Agrawal et al. to teach the specifics subject matter Hauser et al. does not teach, because a robust CPLD architecture has been disclosed for efficiently adapting to the control overhead needs, pinout needs and speed requirements of designs (col. 40, ll.13-18).

With respect to claim 15 Hauser et al. teaches a signal routing device having one or more layers (within circuit board on which several IC chips are assembled (Page1)), and further comprising

an electronic component having a plurality of contacts (within IC chip shown on the Figs. 1-9 (Page 1));

a programmable logic device (PLD) having a plurality of contacts (within IC chip shown on the Figs. 1-9 (Page 1)); and

a plurality of electrically conductive traces connecting contacts of the PLD to respective contacts of the electronic component, the plurality of electrically conductive traces routed from the respective contacts of the electronic component via one or more channels formed at one or more layers of the signal routing device (within multiple conductor tracks/conductive traces used for connecting several IC chips realized on PCB within channels formed on the board using vias (Page 1));

wherein the one or more contacts of the PLD are assigned based at least in part on a pattern formed by the electrically conductive traces routed from the respective contacts of the electronic component via the one or more channels, wherein the one or more channels being formed by arranging vias for contacts of at least the electronic component in the signal routing device (within pin/set of contacts assignment/allocation of the IC chips for connecting one to another within conductor tracks/conductive traces, wherein connection is implemented through corresponding vias in the corresponding layers, and wherein vias form channels (Page 1)).

However Hauser et al. lacks the specifics regarding programmable logic devices (PLD) connected to electronic components. Agrawal et al. teaches CPLD coupled to other circuits/electronic components by PCB traces as shown on the Fig. 1 (col. 11, ll.12-17). It would have been obvious to one of ordinary skill in the art at the time the

invention was made to have used Agrawal et al. to teach the specifics subject matter Hauser et al. does not teach, because a robust CPLD architecture has been disclosed for efficiently adapting to the control overhead needs, pinout needs and speed requirements of designs (col. 40, ll.13-18).

With respect to claims 2-9, 11-14 and 16-18 Hauser et al. teaches

Claim 2: further comprising the step of forming electrically conductive traces between the set of one or more contacts of the PLD and the respective contacts of the electronic component accordance with the pattern of electrically conductive traces (Page 1);

Claim 3: wherein one or more of the electrically conductive traces are routed to respective contacts of the PLD via one or more channels formed at one or more layers of the signal routing device (Page 1);

Claim 4: further comprising the steps of:

determining first pattern of electrically conductive traces routed from respective contacts of the electronic component via at least one channel of the one or more channels (Pages 1, 5);

determining a contact assignment pattern for one or more contacts of the PLD based at least in part on the first pattern of electrically conductive traces (Page 5; Fig. 4);

refining the first pattern of electrically conductive traces based at least in part on the first contact assignment pattern to generate a second pattern of electrically

conductive traces routed from the respective contacts of the electronic component via at least one of the one or more channels (Page 5, Figs. 5-9).

Claim 5: wherein the one or more contacts of the PLD are assigned to the one or more respective contacts of the electronic component based at least in part on the second pattern of electrically conductive traces (Page 1);

Claim 6: further comprising the step of: assigning one or more contacts of the PLD to one or more respective contacts of a second electronic component of the signal routing device based at least in part on a pattern of electrically conductive traces routed from respective contacts of the second electronic component via one or more channels formed at one or more layers of the signal routing device (Page 1);

Claim 7: further comprising the step of: assigning one or more contacts of a second PLD to one or more respective contacts of the electronic component based at least in part on a second pattern of electrically conductive traces routed from respective contacts of the electronic component via one or more channels formed at one or more layers of the signal routing device (Pages 1, 5).

However Hauser et al. lacks the specifics regarding programmable logic devices (PLD) connected to electronic components. Agrawal et al. teaches CPLD coupled to other circuits/electronic components by PCB traces as shown on the Fig. 1 (col. 11, ll.12-17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used Agrawal et al. to teach the specifics subject matter Hauser et al. does not teach, because a robust CPLD architecture has been disclosed

for efficiently adapting to the control overhead needs, pinout needs and speed requirements of designs (col. 40, ll.13-18).

With respect to claims 8, 9, 11-14, 16-18 Agrawal et al. teaches:

Claims 8 and 16: wherein the one or more contacts of the PLD are assigned to the respective contacts of the electronic component by programming the PLD (col. 11, ll.12-17);

Claims 9, 11, 14 and 17: wherein the electronic component includes one of a group consisting of: a programmable logic device (PLD) and an application specific integrated circuit (ASIC) (col. 11, ll.12-17);

Claims 12, 13 as similar limitations of the claims 4 and 5 respectively, including creating contact assignment patterns according to a design change in the FPGA corresponding to the changes in the ASIC design (col. 11, ll.12-17; ll.21-26);

Claim 18: wherein the electrically connective traces are routed to the respective contacts of the PLD via one or more channels formed at one or more layers of the signal routing device (col. 11, ll.12-17).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen Rossoshek whose telephone number is (571)272-1905. The examiner can normally be reached on 7:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on 571-272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HR
03/25/2009

/Helen Rossoshek/
Primary Examiner, Art Unit 2825

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Jack Chiang/

Supervisory Patent Examiner, Art Unit 2825